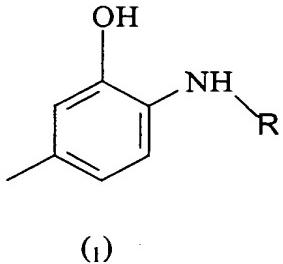


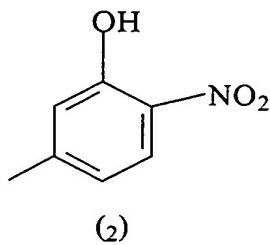
We claim:

1. A compound of formula (1):

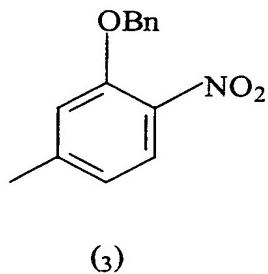


wherein R is selected from the group consisting of C₁ to C₅ alkyl or hydroxyalkyl, a C₃ to C₆ cyclic ring containing hetero atoms selected from O, S and N atoms, and -CH₂-Ar where Ar is an aromatic ring wherein the aromatic ring may be substituted with one or two hydroxy, C₁ to C₃ alkoxy, or amino groups.

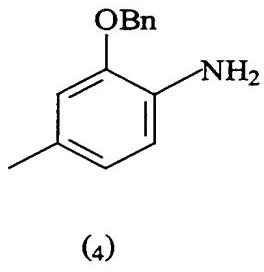
2. A compound of Claim 1 wherein R is selected from the group consisting of C₁ to C₃ alkyl, benzyl, thiophen-ylmethyl, and pyrrolylmethyl.
3. A compound of Claim 2 wherein R is benzyl.
4. A compound of Claim 2 wherein R is thiophen-ylmethyl.
5. A compound of Claim 3 wherein R is pyrrolylmethyl.
6. A compound of Claim 2 wherein R is isopropyl.
7. A process for the preparation of a compound of formula (1) of Claim 1 comprising (a) reacting a compound of formula (2)



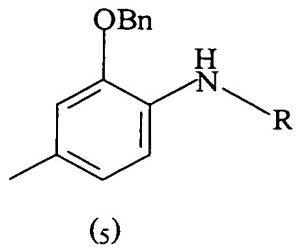
with a benzyl halide to produce a compound of formula (3)



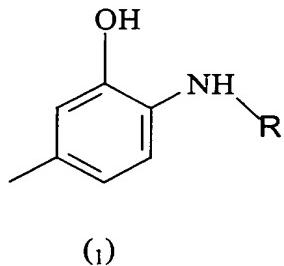
(b) catalytically hydrogenating the compound of formula (3) to provide a compound of formula (4)



(c) reductively aminating of the compound of formula (4) with a reducing agent and a reactant of the formula RCHO or a C_3 to C_6 cyclic ketone to provide a compound of formula (5)

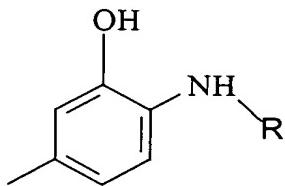


and (d) catalytically hydrogenating the compound of formula (5) to produce a compound of formula (1)



wherein R is as defined in Claim 1.

8. A process according to Claim 7 wherein R is selected from the group consisting of C₁ to C₃ alkyl, benzyl, thiophen-ylmethyl, and pyrrolylmethyl.
9. A process according to Claim 7 wherein R is benzyl.
10. A process according to Claim 7 wherein R is pyrrolylmethyl.
11. A hair dye product comprising a hair dyeing composition containing at least one primary intermediate and at least one coupler and a developer composition containing one or more oxidizing agents, the hair dyeing composition containing a primary intermediate of formula (1):



(I)

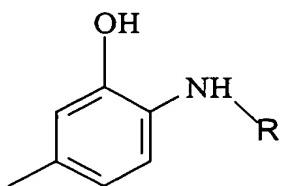
wherein R is selected from the group consisting of C₁ to C₅ alkyl or hydroxyalkyl, a C₃ to C₆ cyclic ring containing hetero atoms selected from O, S and N atoms, and -CH₂-Ar where Ar is an aromatic ring wherein the aromatic ring may be substituted with one or two hydroxy, C₁ to C₃ alkoxy, or amino groups.

12. A hair dye product according to Claim 11 wherein the hair dyeing composition additionally comprises a primary intermediate selected from the group consisting of: 2-methyl-benzene-1,4-diamine, benzene-1,4-diamine, 2-(2,5-diamino-phenyl)-ethanol, 1-(2,5-diamino-phenyl)-ethanol, 2-[(4-amino-phenyl)-(2-hydroxy-ethyl)-amino]-ethanol, 4-amino-phenol, 4-methylamino-phenol, 4-amino-3-methyl-phenol, 1-(5-amino-2-hydroxy-phenyl)-ethane-1,2-diol, 2-amino-phenol, 2-amino-5-methyl-phenol, 2-amino-6-methyl-phenol, N-(4-amino-3-hydroxy-phenyl)-acetamide, pyrimidine-2,4,5,6-tetramine, 2-(4,5-diamino-1H-pyrazol-1-yl)ethanol, 1-(4-methylbenzyl)-1H-pyrazole-4,5-diamine, and 1-(benzyl)-1H-pyrazole-4,5-diamine.

13. A hair dye product according to Claim 11 wherein the coupler present in the hair dyeing composition is selected from the group consisting of: benzene-1,3-diol, 4-chlorobenzene-1,3-diol, naphthalen-1-ol, 2-methyl-naphthalen-1-ol, 2-methyl-benzene-1,3-diol, 2-(2,4-diamino-phenoxy)-ethanol, 2-(3-amino-4-methoxy-phenylamino)-ethanol, 2-[2,4-diamino-5-(2-hydroxy-ethoxy)-phenoxy]-ethanol, and 3-(2,4-diamino-phenoxy)-propan-1-ol, 3-amino-phenol, 5-amino-2-methyl-phenol, 5-

(2-hydroxy-ethylamino)-2-methyl-phenol, 3-amino-2-methyl-phenol, 3,4-dihydro-2H-1,4-benzoxazin-6-ol, 4-methyl-2-phenyl-2,4-dihydro-3H-pyrazol-3-one, 1H-indol-6-ol, and 2-aminopyridin-3-ol.

14. A hair dye product according to Claim 13 wherein the hair dyeing composition additionally comprises a primary intermediate selected from the group consisting of: 2-methyl-benzene-1,4-diamine, benzene-1,4-diamine, 2-(2,5-diamino-phenyl)-ethanol, 1-(2,5-diamino-phenyl)-ethanol, 2-[(4-amino-phenyl)-(2-hydroxy-ethyl)-amino]-ethanol, 4-amino-phenol, 4-methylamino-phenol, 4-amino-3-methyl-phenol, 1-(5-amino-2-hydroxy-phenyl)-ethane-1,2-diol, 2-amino-phenol, 2-amino-5-methyl-phenol, 2-amino-6-methyl-phenol, N-(4-amino-3-hydroxy-phenyl)-acetamide, pyrimidine-2,4,5,6-tetramine, 2-(4,5-diamino-1H-pyrazol-1-yl)ethanol, 1-(4-methylbenzyl)-1H-pyrazole-4,5-diamine, and 1-(benzyl)-1H-pyrazole-4,5-diamine.
15. A hair dye product according to Claim 11 wherein R is selected from the group consisting of C₁ to C₃ alkyl, benzyl, thiophen-ylmethyl, and pyrrolylmethyl.
16. In a hair dyeing system wherein at least one primary intermediate is reacted with at least one coupler in the presence of an oxidizing agent to produce an oxidative hair dye, the improvement wherein the at least one primary intermediate comprises a compound of the formula (1):



(1)

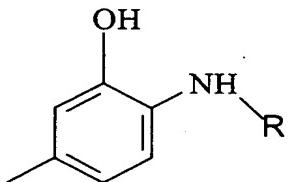
wherein R is selected from the group consisting of C₁ to C₅ alkyl or hydroxyalkyl, a C₃ to C₆ cyclic ring containing hetero atoms selected from O, S and N atoms,

and -CH₂-Ar where Ar is an aromatic ring wherein the aromatic ring may be substituted with one or two hydroxy, C₁ to C₃ alkoxy, or amino groups.

17. A system according to Claim 16 wherein R is selected from the group consisting of C₁ to C₃ alkyl, benzyl, thiophen-ylmethyl, and pyrrolylmethyl.

18. A hair dyeing composition comprising, in a suitable carrier or vehicle, an effective hair dyeing amount of:

- (a) at least one coupler, and
- (b) at least one primary intermediate comprising a compound of the formula (1):



(1)

wherein R is selected from the group consisting of C₁ to C₅ alkyl or hydroxyalkyl, a C₃ to C₆ cyclic ring containing hetero atoms selected from O, S and N atoms, and -CH₂-Ar where Ar is an aromatic ring wherein the aromatic ring may be substituted with one or two hydroxy, C₁ to C₃ alkoxy, or amino groups.

19. A hair dyeing composition of Claim 18 wherein R is selected from the group consisting of C₁ to C₃ alkyl, benzyl, thiophen-ylmethyl, and pyrrolylmethyl.

20. A hair dyeing composition according to Claim 18 additionally comprising a primary intermediate selected from the group consisting of: 2-methyl-benzene-1,4-diamine, benzene-1,4-diamine, 2-(2,5-diamino-phenyl)-ethanol, 1-(2,5-diamino-phenyl)-ethanol, 2-[(4-amino-phenyl)-(2-hydroxy-ethyl)-amino]-ethanol, 4-amino-

phenol, 4-methylamino-phenol, 4-amino-3-methyl-phenol, 1-(5-amino-2-hydroxy-phenyl)-ethane-1,2-diol, 2-amino-phenol, 2-amino-5-methyl-phenol, 2-amino-6-methyl-phenol, N-(4-amino-3-hydroxy-phenyl)-acetamide, pyrimidine-2,4,5,6-tetramine, 2-(4,5-diamino-1H-pyrazol-1-yl)ethanol, 1-(4-methylbenzyl)-1H-pyrazole-4,5-diamine, and 1-(benzyl)-1H-pyrazole-4,5-diamine.

21. A hair dyeing composition according to Claim 18 wherein the at least one coupler is selected from the group consisting of: benzene-1,3-diol, 4-chlorobenzene-1,3-diol, naphthalen-1-ol, 2-methyl-naphthalen-1-ol, 2-methyl-benzene-1,3-diol, 2-(2,4-diamino-phenoxy)-ethanol, 2-(3-amino-4-methoxy-phenylamino)-ethanol, 2-[2,4-diamino-5-(2-hydroxy-ethoxy)-phenoxy]-ethanol, and 3-(2,4-diamino-phenoxy)-propan-1-ol, 3-amino-phenol, 5-amino-2-methyl-phenol, 5-(2-hydroxy-ethylamino)-2-methyl-phenol, 3-amino-2-methyl-phenol, 3,4-dihydro-2H-1,4-benzoxazin-6-ol, 4-methyl-2-phenyl-2,4-dihydro-3H-pyrazol-3-one, 1H-indol-6-ol, and 2-aminopyridin-3-ol.

22. A hair dyeing composition according to Claim 21 additionally comprising a primary intermediate selected from the group consisting of: 2-methyl-benzene-1,4-diamine, benzene-1,4-diamine, 2-(2,5-diamino-phenyl)-ethanol, 1-(2,5-diamino-phenyl)-ethanol, 2-[(4-amino-phenyl)-(2-hydroxy-ethyl)-amino]-ethanol, 4-amino-phenol, 4-methylamino-phenol, 4-amino-3-methyl-phenol, 1-(5-amino-2-hydroxy-phenyl)-ethane-1,2-diol, 2-amino-phenol, 2-amino-5-methyl-phenol, 2-amino-6-methyl-phenol, N-(4-amino-3-hydroxy-phenyl)-acetamide, pyrimidine-2,4,5,6-tetramine, 2-(4,5-diamino-1H-pyrazol-1-yl)ethanol, 1-(4-methylbenzyl)-1H-pyrazole-4,5-diamine, and 1-(benzyl)-1H-pyrazole-4,5-diamine.

23. A process for dyeing hair comprising forming a hair dye product composition by mixing a developer composition and a hair dyeing composition as defined in Claim 18, applying to the hair an amount of the hair dye product composition effective to dye the hair, permitting the hair dye product composition to contact the

hair for period of time effective to dye the hair, and removing the hair dye product composition from the hair.

24. A process according to Claim 23 wherein R is selected from the group consisting of C₁ to C₃ alkyl, benzyl, thiophen-ylmethyl, and pyrrolylmethyl.

卷之三